

13. Flight Planning

13.1 Time conversion

When traveling and communicating over large distances, it is important to use a standard time reference. Without such a reference, imagine the difficulties involved if you want to plan another hypothetical flight, this time from Phoenix, Arizona, to Maxwell Air Force Base, Alabama. When checking the Notices to Airmen (NOTAMs), you find that Maxwell is closed until 1200. What time should you leave Phoenix so that you don't arrive at Maxwell before the airport opens? If the hypothetical airplane could fly such a trip in six hours, would you want to leave Phoenix at 6:00? The answer in this case is "no".

The first question in making such a determination would probably be: "Does Maxwell open at 12:00 *noon* or 12:00 *midnight*?" To immediately eliminate such confusion, all times used in aviation use the 24-hour "military" clock. In the 24-hour clock, midnight is identified as 0000 and the morning hours are then numbered normally up to the noon hour or 1200. Continuing into the afternoon, 1:00 p.m. is identified as 1300, 2:00 p.m. is 1400, 3:00 p.m. is 1500, and so on through 11:59 p.m. or 2359. At midnight, the designations start over again at 0000.

Another flight planning question in this case is: "Maxwell opens at 1200. Is that Central Time, the time zone where Maxwell is located or Mountain Time where Phoenix is located?" To further complicate matters, it is not clear whether that is standard time, or daylight-saving time. Maxwell uses daylight-saving time in the summer like most of the rest of the country, but Phoenix doesn't. You may recall from the discussion of latitudes and longitudes that there are 360 meridians of longitude on the earth's surface. The numbering for them starts at the prime or 0° meridian that passes through Greenwich, England. To bring uniformity and a standard reference to time designation, all time references are based on Coordinated Universal Time (UTC), *Greenwich Mean Time* (GMT), or *Zulu* time.

When you see that Maxwell is closed until 1200Z that means Maxwell is closed until its 1200 noon in Greenwich, England. To arrive at Maxwell right as the airfield opens, you should depart Phoenix on your six-hour flight when it's 0600 in Greenwich, England. You can then convert that Zulu time to Phoenix local time by adding or subtracting the number of hours that are appropriate to the Phoenix time zone.

Figure 13-1 shows part of the first two lines of the Phoenix-Sky Harbor International Airport entry from the Southwest Volume of the Airport/Facility Directory. You know from your earlier calculation that you want to depart Phoenix at 0600 Greenwich Mean Time to arrive at Maxwell at 1200Z.

Use the conversion factor, UTC -7, from line 1 of the Phoenix Sky Harbor entry and subtract it, since it has a minus sign, from 0600. This reveals your

departure time would be at 2300 local time or 11:00 p.m. the night before. Airports in states that use daylight-saving time are indicated in the facility directory with daylight-saving time to UTC conversion factors shown in parentheses.

If you don't really care what time you will arrive at Maxwell and want to depart Sky Harbor at 8:00 a.m., you still must determine the *Zulu* departure time for the pilot to include on the flight plan he'll file with the FAA. In this case, convert from local to Zulu or Greenwich Mean Time by reversing the minus sign in the conversion factor, UTC -7, and adding seven to the 8:00 proposed departure time. The departure time is written on the flight plan as 1500Z. Maxwell would expect you to arrive six hours later, at 2100Z.

PHOENIX SKY HARBOR INTL	(PHX)	3E	UTC -7	33°26.17'N 112°00.57'W
1133 B S4	FUEL 100LL, JET-A			
KILL DEVIL HILLS	(FFA)	3E	UTC -5 (-4 DT)	N36°01.09' W75°40.28'
13 TPA-813(800)				

Figure 13-1

13.2 The Flight Plan

A flight plan (CAPF 104 or 84) is required for each sortie flown by your aircrew. This flight plan is the pilot's responsibility; it amounts to a before-and-after record of the total flight. You will not have anything to contribute to the flight plan document other than your name, but your observations may become part of it after the sortie.

Your pilot must consider many things as he fills out the flight plan. The primary purpose of a flight plan is to let mission headquarters know where your aircraft is going and when it will return. Thus, the route of flight and estimated time of arrival (return) is of utmost importance. If an airplane isn't back within a reasonable time past the pilot's estimated time of return, a search will be started. Thus, it is possible to have a "search within a search."

Determining how long it will take to fly to the search area, conduct the search, and return requires thorough planning. As an observer, you are encouraged to assist the pilot in planning the flight.

For flights greater than 50 nm away from your base, CAP requires the pilot to file a FAA flight plan in addition to the CAP flight plan.

13.3 IFR and VFR flight rules

Imagine a highway system where the roads have no stoplights, stop signs, edge boundaries, centerline markings, or direction signs, and where there are no one-way streets and no police to direct traffic. The skies would truly be a hazardous environment if procedures and rules did not exist to bring order to what would otherwise be anarchy. The Federal Aviation Administration (FAA) is the executive agency tasked with developing rules and procedures for aircraft

operators, managing the system, and enforcing the rules and procedures. Bringing order and safety to millions of daily flights in the United States is the responsibility of the FAA's air traffic control facilities, frequently abbreviated as ATC.

The FAA has developed visual flight rules (VFR) and instrument flight rules (IFR) to govern the activities of pilots and controllers. When the pilot files a flight plan under visual flight rules, or VFR, he assumes complete responsibility for seeing and avoiding all other aircraft. Operations under VFR can only be conducted if the visibility is at least 3 statute miles **and**, if the sky is more than one-half covered by clouds, the bases of those clouds must be no lower than 1,000 feet above the surface. Also, the pilot must stay away from clouds by at least 2,000 feet horizontally, or remain either 1,000 feet above, or 500 feet below the clouds. There are exceptions to these rules, but for the present purpose, these conditions normally apply. Because the pilot takes responsibility for seeing and avoiding all other aircraft, communication requirements are significantly less complicated than when he chooses to operate under IFR.

Under instrument flight rules (IFR) the pilot enters into a partnership with the air traffic controller. Within that partnership, the controller has responsibility for using his radar to maintain safe separation between *all* aircraft that are operating under instrument flight rules, and between IFR and participating VFR aircraft. Participating VFR aircraft are those VFR aircraft that are provided separation service by the controller either because the pilot has requested it, or FAA regulations for the category of airspace in which the flight is conducted require it.

When aircraft operate under IFR, they must all follow pre-approved flight paths so the controller can maintain separation. Aircraft operating under IFR cannot make changes in altitude or course without permission from the controller. Receiving permission is known as receiving a "clearance".

Flight under IFR is inherently inflexible and usually not practical when conducting visual searches. The rules and limitations in radar system capabilities may prevent radar (or communications) coverage of flights in the 500 to 1500 foot AGL search altitude range, making visual searches under IFR unsuitable. Electronic searches may be conducted at higher altitudes, and selection of IFR *may* be appropriate when considering all the circumstances and urgency of the situation. Instrument flight rules also require the pilot to be specially trained and certified to control the airplane by referencing only the airplane's instruments. Additionally, the aircraft itself must be certified for IFR flight (CAP aircraft are required to maintain this certification).

It's important to understand that IFR and VFR are different sets of rules with which the pilot must comply. Even though the weather may be clear with no restrictions to visibility, if a flight is operated under IFR all the communication and coordination requirements still apply.

13.4 Briefings

13.4.1 General

Formal and complete briefings and debriefings are essential to a safe and effective mission. They must be comprehensive, but concise and specific. Inadequate briefings may lead to complacency and compromise both the mission and safety. Briefings and debriefings should be conducted in a formal atmosphere and in a suitable briefing room. Professionalism and compliance with directives will be stressed. Detailed checklists should be used to prevent omission of important data. Briefings also must be scheduled to allow crews ample time for pre-departure activities. The briefing will set the tone for mission accomplishment.

13.4.2 General Briefing

A general group briefing is normally presented at the beginning of the mission and updated as necessary. The briefing (usually following CAPF 102) should present important information and bring aircrews and ground teams up-to-date on developments in the mission. Personnel must be kept fully informed of operational plans and the status of the mission so that individual aircrews and ground teams may make sound decisions and assist in providing information to the IC/MC.

13.4.3 Aircrew and Ground Team Briefings

In addition to the requirement for a general mission briefing, each aircrew and ground team will be given a detailed briefing prior to each sortie. This will include the type of mission, areas to be covered, assigned altitudes, search patterns, communications frequencies and procedures, actions to be taken if the objective is located, hazards to operations, and other pertinent information. Individual briefing folders should be prepared for each aircrew and ground team. Aircrew briefing kits, which are maintained by each Mission Pilot, should contain:

- CAP Form 104, Mission Flight Plan/Briefing.
- CAPR 55-1, CAP Emergency Services Mission Procedures.
- Appropriately gridded sectional charts (should be prepared on a permanent basis). Current charts must be used for navigation and obstruction clearance.
- Specialized briefing checklists (as applicable).
- Any other appropriate material considered necessary.

It is essential that all involved in a briefing understand what is briefed. You must ask questions if you don't understand something or want further information. It is your duty to receive a thorough briefing.

13.4.4 Crew and Passenger Briefings

Prior to each flight, the pilot in command will brief the crew and passengers. This briefing will include essential information regarding the flight, such as route, weather, altitudes, duties, and specific information concerning the aircraft, such as survival equipment, emergency exits, and in-flight emergency procedures. When more than one flight is accomplished by the same crew and passengers during the day, subsequent briefings are not required in their entirety but must at a minimum highlight differences and changes from the original briefing.

13.4.5 Debriefings

Debriefings serve to collect and record information from each sortie. This information is then collated and evaluated by mission staff. The results of each sortie effect all successive activities.

An aircrew or ground team cannot search with "negative results". Even if the objective is not located, important information is obtained (e.g., weather, ground cover, and other factors affecting search visibility and effectiveness).

Aircrews enter mission data and write their comments on the reverse of the CAPF 104 after each sortie. The debriefer reviews this during the debriefing and may then ask the crew for additional information.

The most important information a search aircrew or ground team can provide is what was searched and how effective the search was. The CAPF 104 requires the crew to rate crew and SAR effectiveness. Factors such as the weather, terrain, time of day, turbulence, shadows, ground coverage, and visibility must be considered. Debriefing results are provided to the operations and planning staff periodically or whenever significant items are evident. At the end of operational period, the IC/MC and mission staff use the debriefing forms to update the search status, compile probability of detection, and determine priorities for the next period's activities.

It is absolutely essential that the information you give the debriefer is accurate and thorough. You must be brutally honest about what you saw or what you think you may have missed, how much time you spent looking inside the aircraft, how you felt during the search, what areas you think may need to be searched again, and the like. The mission staff and the IC/MC depend upon this information to judge the progress of the mission and to determine future plans. If you think crew and SAR effectiveness were excellent (if it was there we would have seen it), say so. If you have any doubts, express them.

13.4.6 Form 104

The front of the CAPF 104, Mission Flight Plan/Briefing Form, is primarily the pilot's responsibility. The reverse side of the form is crew's responsibility and is very important to the debriefer.

The debriefer uses the information on the reverse side of the Form 104 as a starting point for the debriefing. For example, more information on search area weather conditions may be needed, and you should be ready to volunteer your observations. Perhaps you noticed an increase in cloud shadows. Perhaps visibility seemed to deteriorate because of haze that developed after your team

arrived in the search area. Any number of factors could have changed while you were in the search area. To make the best contribution to the debriefing requires that you remember these details and be prepared to tell the debriefer about them. This is why it is so important that you keep a log of each sortie.

We cannot predict exactly what your debriefer will ask because each debriefer has her own method of doing the job. Debriefers are expected to gather information about specific events and conditions encountered during the sortie. Here are some examples of questions you may be asked by the debriefer:

Did you notice anything, which might be hazardous?

The debriefer wants you to think back to everything that happened during the sortie. For example, see if you can remember anything on the flight line that seemed to be an unsafe practice. If you saw flocks of birds anywhere during the flight, say so and try to remember where they were. Birds pose a special hazard to aircraft and the larger the bird the more trouble it can make. This is particularly true of geese, ducks and egrets.

Although you may not be sure that a condition or event posed a hazard, do not hesitate to volunteer your concerns. No one is going to laugh at a "stupid" remark -- all information is important.

Did you make any changes to the planned search procedure?

One of the debriefer's primary interests is determining whether you searched your assigned area(s). If, for example, your crew diverted frequently to examine clues, there is a good possibility that search coverage was not adequate and another sortie may be justified. If you became excessively tired and rested your eyes frequently, the debriefer needs to know.

What types of clues did you investigate?

The debriefer needs to know what clues you investigated and those you deemed unimportant. Perhaps a clue seemed so insignificant that you decided not to investigate; describe it and its location. Also, it is important to describe clues that were investigated and found to be false. Pinpoint these on the map. This information may become part of the briefing for another aircrew because it will prevent them from wasting time by investigating the same false clues.

When the debriefer is satisfied that all pertinent information has been noted you will be dismissed. Now what should you do? Obviously, you will need rest. If you are scheduled for another sortie, find someplace quiet. Close your eyes. Try to sleep, if there is time to do so.

The mission normally ends when the search objective is located. At this time mission personnel will return to their homes. If the search objective has not been found but it is determined that further searching is unwarranted, the mission will be suspended. When a mission is suspended it means that it may be reopened if additional clues are received. Even so, all mission personnel return to their homes and wait for the next mission alert.